



May 23, 2014

Ms. Katharine K. Buckner
Sandhills and Pulp & Paper Permitting Section
Engineering Services Division
Bureau of Air Quality
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201-1708

Re: Resolute FP US Inc.
Request for Construction Permit Exemption
Industrial Boiler MACT Modifications – No. 1 and No. 2 Combination Boilers

Dear Ms. Buckner:

As we discussed recently, please find the attached updated exemption request for the No. 1 and No. 2 Combination Boilers at the Resolute FP US Inc. (Resolute) paper mill in Catawba, SC.

The updated exemption request now includes page A-5 with the additional information you requested regarding the basis of the expected reduction in PM and CO emissions of seven (7) percent due to the proposed changes. Compliance Assurance Monitoring requirements have also been addressed as you requested on page 9. The April 2010 PM compliance test is no longer included in Table 1 or the emission estimates since oil was co-fired with bark during that test. The project scope has also now been sufficiently defined such that the multi-clones will be upgraded rather than entirely replaced.

If you have any questions, require further clarification, or need additional information regarding this exemption request, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink that reads "Steven R. Moore".

Steven R. Moore
URS Corporation

Attachment

cc: Mr. Dale Herendeen – Resolute FP US Inc.



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Re: Resolute FP US Inc.
Request for Construction Permit Exemption
Industrial Boiler MACT Modifications – No. 1 and No. 2 Combination Boilers

Dear Ms. Buckner:

As we discussed recently, Resolute FP US Inc. (Resolute) plans to make modifications to the No. 1 and No. 2 Combination Boilers to comply with the Industrial Boiler MACT. Resolute believes this project qualifies for the exemption from the requirement to obtain a construction permit under the Department's November 2, 2011 guidance document "Like-for-Like replacement of equipment and control device(s) at Prevention of Significant Deterioration (PSD) Major Sources".

Background

Resolute FP US, Inc. (Resolute) operates a pulp and paper mill located in Catawba, South Carolina. Resolute plans to modify the existing No. 1 and No. 2 Combination Boilers at the Catawba Mill to comply with the National Emission Standards for Hazardous Air Pollutants (NESHAP) from Industrial, Commercial, and Institutional Boilers and Process Heaters (Industrial Boiler MACT - 40 CFR Part 63, Subpart DDDDD).

The No. 1 and No. 2 Combination Boilers are currently permitted to burn biomass, tire-derived fuel (TDF), residual fuel oil, specification used oil, and natural gas. The Combination Boilers are also control devices used to burn the non-condensable gases (NCG's) generated by the Kraft pulp mill for compliance with the Pulp and Paper NESHAP (40 CFR Part 63, Subpart S) and the Kraft pulp mill New Source Performance Standards (40 CFR 60, Subpart BB).

The Industrial Boiler MACT emission limits and work practice standards vary depending on the applicable sub-category of each boiler. The primary fuel for the No. 1 and No. 2 Combination Boilers is wet biomass. Both of these sources were classified as "hybrid suspension grate" boilers by the South Carolina Department of Health and Environmental Control on October 13, 2013. This project will not change the fuels fired or the design of the boilers.

SC Reg. 61-62.1, Section II – Permit Requirements

South Carolina Regulation 61-2.1, Section II.A.1.a requires sources to obtain a construction permit from the Department prior to any construction, alteration, or addition to a source of air contaminants, including control devices. Section II.A.1.b allows the Department to grant permission to proceed with minor alterations or additions to sources of air contaminants without issuance of a construction permit when the Department determines the alteration or addition will not increase the quantity or alter the character of the source's emissions.

Like-for-like Replacement Exemption

Resolute believes this project qualifies for the exemption from construction permitting. This project is consistent with the exemption criteria in Section II.B.5 and the construction permit exemption criteria in the November 2, 2011 guidance "Like-for-Like replacement of equipment and control device(s) at Prevention of Significant Deterioration (PSD) Major Sources."

Resolute requests an exemption from the requirement to obtain a construction permit for this project. Resolute has prepared this submittal which addresses all the exemption criteria for replacement of control devices.

Project Description

This project will upgrade the emission controls on each boiler to ensure compliance with the applicable Industrial Boiler MACT emission limits for boilers in the hybrid suspension grate sub-category. The planned changes to each combination boiler include upgrading the existing over-fire air (OFA) system and the existing multi-clone dust collectors (MDC's).

The project will not change the maximum or actual amount of biomass, TDF, natural gas, residual oil, or specification used oil fired by the No. 1 and No. 2 Combination Boilers. There are no changes planned to the combustion grate, the natural gas burners, or the residual oil burners, and no increase in the maximum heat input capacity for any fuel.

Over-fire Air System Upgrade Description

The over-fire air system (OFA) system serving each boiler will be upgraded to provide more reliable and consistent combustion control to maintain compliance with the applicable carbon monoxide (CO) emission limit. The OFA upgrades may include new OFA air nozzles, a new OFA booster fan, new air-swept fuel spouts, and the associated piping, dampers, motors, etc. to more precisely control the air distribution within each boiler. The new air-swept fuel spouts will also allow a more uniform fuel distribution across the grate, further improving combustion.

The existing OFA system does not have a traditional manufacturer and model number since it consists of various parts of the boiler combustion air system. Resolute has not selected the vendor for the OFA system upgrades so no manufacturer or model number is currently available for the OFA system equipment.

The existing Detroit Stoker "old-style" air-swept fuel spouts will be replaced with Detroit Stoker "new-style" air swept spouts. The new OFA nozzles and new air-swept spouts will reduce CO

emissions by providing more control over the air distribution within each boiler across the range of boiler operating loads.

Multi-Clone Dust Collector Upgrade Description

Each existing multi-clone dust collector (MDC) will be upgraded to maintain particulate matter (PM) and opacity emissions below the level required from hybrid suspension grate boilers. The MDC upgrades include replacing the collecting tubes with larger diameter tubes and replacing the upper section of the external shell if necessary. The existing MDC hoppers and lower external shell will remain unchanged. The manufacturer and model number will depend on the selected vendor.

The OFA system upgrade is also expected to reduce carry-over of particulate matter from each boiler into its downstream MDC and electro-static precipitator (ESP).

Electro-static Precipitator (ESP) Upgrade Description

Modifications to each existing ESP may be required in a subsequent project if the planned modifications to the OFA and MDC systems do not demonstrate compliance with the applicable Boiler MACT particulate matter and opacity emission limits. The manufacturer and model number will be determined if/when this upgrade becomes necessary.

Pollutants Controlled

The OFA system upgrades are designed reduce the CO emissions from each boiler. The OFA system upgrades are also expected to have the collateral benefit of reducing entrained particulate matter to each MDC. The MDC upgrades are designed to reduce PM emissions from each boiler. The combined MDC and OFA system upgrades are also expected to reduce the opacity of emissions from each boiler.

Comparison of Old and New Control Device Emissions

The actual and potential CO emissions for the existing OFA system and the upgraded OFA system are based on the Title V emission factors approved by the Department for each boiler. Similarly, the actual and potential PM emissions for the existing MDC's and the upgraded MDC's are based on the Title V emission factors for residual oil, natural gas, and tire derived fuel. The PM emissions from bark are based on the average emission factors from the 2011 and 2013 compliance tests. The PM₁₀ and PM_{2.5} emission factors for bark are based on the ratio of PM to PM₁₀ and PM to PM_{2.5} found in the Title V emission inventory and AP-42. The PM emission factors are shown in Table 1.

Table 1
PM, PM₁₀, and PM_{2.5} Emission Factors Burning Bark

	CB1	CB2			
Test	(lb/MMBtu)	(lb/MMBtu)			
April 2011	0.176	0.186			
April 2013	0.171	0.288			
Average PM	0.174	0.237			
PM ₁₀ *	0.129	0.176			
PM _{2.5} **	0.112	0.154			
* PM ₁₀ ratioed by AP-42 PM (0.054 lb/MMBtu) and PM ₁₀ (0.040 lb/MMBtu).					
** PM _{2.5} ratioed by AP-42 PM (0.054 lb/MMBtu) and PM _{2.5} (0.035 lb/MMBtu).					

As discussed recently with the Department, Resolute has collected additional engineering data to evaluate each boiler for compliance with the applicable Industrial Boiler MACT emission limits. The engineering data collected indicates that the existing (old) control devices may emit CO and PM at levels possibly exceeding the applicable Industrial Boiler MACT limits approximately seven (7) percent of the operating time (see Attachment A).

Resolute expects the upgraded control devices to reduce the CO and PM emissions below the applicable Industrial Boiler MACT emission limits. Therefore, a seven (7) percent reduction was applied to the CO and PM emissions from the new control devices. The actual and potential CO and PM emissions from the OFA system and MDC for each boiler are summarized in Tables 2-5 below.

Table 2
Old and New Control Device Actual Emissions – No. 1 Combination Boiler

No. 1 Combination Boiler					Actual Heat Input - Existing (old) OFA System and MDC					Actual Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
					258.4	3.5	7.4	13.1	282.3	258.4	3.5	7.4	13.1	282.3
					Actual Emissions - Existing (old) OFA System and MDC					Actual Emissions - Upgraded OFA System and MDC				
	Bark	No. 6 Oil	Gas	TDF	Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL
Pollutant	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	1.74E-01	1.51E-01	1.90E-03	2.20E-06	196.3	2.3	0.1	0.0	198.7	182.6	2.3	0.1	0.0	185.0
CO	6.00E-01	3.33E-02	8.40E-02	7.20E-05	679.0	0.5	2.7	0.0	682.2	631.5	0.5	2.7	0.0	634.7

All emission factors from Title V Inventory except Bark PM average of 2011 and 2013 compliance test values and Bark PM₁₀ and PM_{2.5} ratioed by AP-42 emission factors.

Table 3
Old and New Control Device Actual Emissions – No. 2 Combination Boiler

No. 2 Combination Boiler					Actual Heat Input - Existing (old) OFA System and MDC					Actual Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)
					353.2	6.5	12.7	17.8	390.3	353.2	6.5	12.7	17.8	390.3
					Actual Emissions - Existing (old) OFA System and MDC					Actual Emissions - Upgraded OFA System and MDC				
	Bark	No. 6 Oil	Gas	TDF	Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL
Pollutant	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	2.37E-01	1.51E-01	1.90E-03	2.20E-06	366.7	4.3	0.1	0.0	371.1	341.0	4.3	0.1	0.0	345.4
CO	6.00E-01	3.33E-02	8.40E-02	7.20E-05	928.2	1.0	4.7	0.0	933.9	863.3	1.0	4.7	0.0	868.9

All emission factors from Title V Inventory except Bark PM average of 2011 and 2013 compliance test values and Bark PM₁₀ and PM_{2.5} ratioed by AP-42 emission factors.

Table 4
Old and New Control Device Potential Emissions – No. 1 Combination Boiler

No. 1 Combination Boiler					Potential Heat Input - Existing (old) OFA System and MDC					Potential Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
					392.0	392.0	405.0	46.5	405.0	392.0	392.0	405.0	46.5	405.0

Emission Factor					Potential Emissions - Existing (old) OFA System and MDC					Potential Emissions - Upgraded OFA System and MDC				
	Bark	No. 6 Oil	Gas	TDF	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM
Pollutant	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	1.74E-01	1.51E-01	1.90E-03	2.20E-06	297.9	258.6	3.4	0.0	297.9	277.0	258.6	3.4	0.0	277.0
CO	6.00E-01	3.33E-02	8.40E-02	7.20E-05	1,030.2	57.2	149.0	0.0	1,030.2	958.1	57.2	149.0	0.0	958.1

All emission factors from Title V Inventory except Bark PM average of 2011 and 2013 compliance test values and Bark PM10 and PM2.5 ratioed by AP-42 emission factors.

Table 5
Old and New Control Device Potential Emissions – No. 2 Combination Boiler

No. 2 Combination Boiler					Potential Heat Input - Existing (old) OFA System and MDC					Potential Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)
					498.0	700.0	720.0	46.5	720.0	498.0	700.0	720.0	46.5	720.0

Emission Factor					Potential Emissions - Existing (old) OFA System and MDC					Potential Emissions - Upgraded OFA System and MDC				
	Bark	No. 6 Oil	Gas	TDF	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM
Pollutant	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	2.37E-01	1.51E-01	1.90E-03	2.20E-06	517.0	461.8	6.0	0.0	517.0	480.8	461.8	6.0	0.0	480.8
CO	6.00E-01	3.33E-02	8.40E-02	7.20E-05	1,308.7	102.2	264.9	0.0	1,308.7	1,217.1	102.2	264.9	0.0	1,217.1

All emission factors from Title V Inventory except Bark PM average of 2011 and 2013 compliance test values and Bark PM10 and PM2.5 ratioed by AP-42 emission factors.

SC Reg. 61-62.5, Standard No. 1 – Emissions from Fuel Burning Operations

The No. 1 and No. 2 Combination Boilers are currently subject to the following Standard No. 1 emission limits for Opacity, PM, and SO₂:

- Opacity not to exceed 40% (except for 6-minutes per hour and 24-minutes per day)
- PM ≤ 0.6 lb/MMBtu heat input
- SO₂ ≤ 3.5 lb/MMBtu heat input

The No. 1 and No. 2 Combination Boilers are currently subject to Standard No. 1 opacity monitoring requirements. The OFA system and MDC upgrades will not change the existing Standard No. 1 emission limits or the opacity monitoring requirements.

SC Reg. 61-62.5, Standard No. 5.2 – Control of Oxides of Nitrogen (NO_x)

The OFA system upgrade involves modernizing the combustion air delivery system to improve combustion control and lower emissions. The OFA system upgrade does not involve any changes to the combustion grate, the natural gas burners, the residual oil burners, or the NCG burners. The OFA system upgrade meets the exemption criteria specified in Standard 5.2, Section I(a)(2) for burner heads, nozzles, and windboxes.

SC Reg. 61-62.5, Standard No. 2 – Ambient Air Quality Standards

The previously modeled emission rates of PM are based on the current state allowable emission limit of 0.6 lb/MMBtu. The applicable Industrial Boiler MACT emission limit is 0.44 lb/MMBtu, resulting in future maximum PM emission rates lower than previously modeled. The modeled CO emission rates based on the Title V emission inventory are expected to remain unchanged, although an actual CO emission reduction is expected to occur.

The emissions of SO₂, NO_x, and lead from the No. 1 and No. 2 Combination Boilers are expected to remain unchanged as a result of the project. Therefore, air dispersion modeling for Standard No. 2 is not being submitted at this time.

SC Reg. 61-62.5, Standard No. 7 – Prevention of Significant Deterioration Permit Requirements

The proposed modifications to the OFA System and MDC on each combination boiler are expected to decrease the CO and PM emissions from current levels to ensure compliance with the Industrial Boiler MACT emission limits. There are no increases in biomass, natural gas, residual oil, specification used oil, or TDF firing expected as a result of the project. The Catawba Mill currently has no plans to increase utilization of the combination boilers. As a result, there are no anticipated increases in emissions of SO₂, NO_x, lead, or greenhouse gases due to the project.

The PSD applicability was determined using the actual-to-projected actual applicability test of Standard No. 7(a)(2)(c). The baseline actual emissions presented in Table 6 are for the period January 2011 through December 2012 as defined in Standard No. 7(b)(4). The emissions the boilers could have accommodated during the baseline that are unrelated to the project are presented in Table 7, in accordance with Standard No. 7 (b)(41)(ii)(c). The accommodated emissions are based on the highest month during the baseline period. The projected actual emissions are presented in Table 8. Since there are no projected increases in boiler utilization as a result of this project, and no other currently planned increases in boiler utilization, the accommodated emissions also serve as the basis of the projected actual emissions in accordance with Standard No. 7 (b)(41)(i).

The detailed calculations are provided in Attachment A.

Table 6
Baseline Actual Emissions (January 2011 to December 2012)

	Baseline Emissions - No. 1 Combination Boiler					Baseline Emissions - No. 2 Combination Boiler					
	Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL	
	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	
	258.4	3.5	7.4	13.1	282.3	353.2	6.5	12.7	17.8	390.3	
Pollutant	Baseline Emissions - No. 1 Combination Boiler					Baseline Emissions - No. 2 Combination Boiler					TOTAL
	Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL	EMISSIONS
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	196.3	2.3	0.1	0.0	198.7	366.7	4.3	0.1	0.0	371.1	569.8
PM ₁₀	145.4	1.6	0.1	0.0	147.1	271.6	3.1	0.1	0.0	274.8	421.9
PM _{2.5}	127.3	1.2	0.1	0.0	128.5	237.6	2.2	0.1	0.0	240.0	368.5
CPM	19.2	0.2	0.2		19.6	26.3	0.3	0.3		26.9	46.5
SO ₂	28.3	33.8	0.0	0.0	62.1	38.7	62.9	0.0	0.0	101.6	163.7
NO _x	249.0	4.8	9.1	0.0	262.9	340.4	9.0	15.6	0.0	364.9	627.8
CO	679.0	0.5	2.7	0.0	682.2	928.2	1.0	4.7	0.0	933.9	1,616.1
VOC	14.7	0.1	0.2		15.0	20.1	0.1	0.3		20.6	35.5
Pb	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.7	2.7	4.7
CO ₂	108,474	1,154	1,717	4,919	116,264	148,287	2,150	2,957	6,697	160,090	276,355
CH ₄	36.2	0.0	0.0	1.8	38.1	49.5	0.1	0.1	2.5	52.1	90.3
N ₂ O	4.8	0.0	0.0	0.2	5.0	6.5	0.0	0.0	0.3	6.8	11.9
CO ₂ m	108,515	1,154	1,718	4,921	116,307	148,343	2,150	2,957	6,700	160,149	276,457
CO ₂ e	110,795	1,158	1,719	5,036	118,709	151,461	2,157	2,960	6,857	163,435	282,144

Table 7
Could Have Accommodated Emissions

	Accommodated Emissions - No. 1 Combination Boiler					Accommodated Emissions - No. 2 Combination Boiler					
	Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL	
	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	
	314.5	21.9	14.0	20.1	370.5	409.5	45.5	45.2	25.0	525.2	
Pollutant	Accommodated Emissions - No. 1 Combination Boiler					Accommodated Emissions - No. 2 Combination Boiler					TOTAL
	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	EMISSIONS
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	239.0	14.5	0.1	0.0	253.6	425.1	30.0	0.4	0.0	455.5	709.1
PM ₁₀	177.1	10.3	0.1	0.0	187.4	314.9	21.3	0.4	0.0	336.6	524.0
PM _{2.5}	154.9	7.5	0.1	0.0	162.5	275.5	15.6	0.4	0.0	291.4	454.0
CPM	23.4	1.0	0.3	0.0	24.7	30.5	2.0	1.1	0.0	33.6	58.3
SO ₂	34.4	210.9	0.0	0.0	245.4	44.8	438.1	0.1	0.0	483.0	728.4
NO _x	303.1	30.1	17.1	0.0	350.3	394.6	62.4	55.5	0.0	512.5	862.8
CO	826.6	3.2	5.1	0.0	834.9	1,076.2	6.6	16.6	0.0	1,099.5	1,934.4
VOC	17.9	0.5	0.3	0.0	18.7	23.3	1.0	1.1	0.0	25.4	44.1
Pb	0.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.8	3.8	6.8
CO ₂	132,052	7,207	3,243	7,556	150,058	171,920	14,967	10,504	9,397	206,789	356,847
CH ₄	44.1	0.3	0.1	2.8	47.2	57.4	0.6	0.2	3.5	61.7	108.9
N ₂ O	5.8	0.1	0.0	0.4	6.2	7.5	0.1	0.0	0.5	8.1	14.4
CO ₂ m	132,102	7,208	3,243	7,559	150,111	171,985	14,968	10,504	9,401	206,859	356,970
CO ₂ e	134,878	7,232	3,246	7,736	153,092	175,600	15,018	10,515	9,622	210,754	363,846

Table 8
Projected Actual Emissions

	Projected Actual Emissions - No. 1 Combination Boiler					Projected Actual Emissions - No. 2 Combination Boiler					
	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	
	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	
	314.5	21.9	14.0	20.1	370.5	409.5	45.5	45.2	25.0	525.2	
Pollutant	Projected Actual Emissions - No. 1 Combination Boiler					Projected Actual Emissions - No. 2 Combination Boiler					TOTAL
	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	EMISSIONS
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	222.3	14.5	0.1	0.0	236.9	395.3	30.0	0.4	0.0	425.7	662.6
PM ₁₀	177.1	10.3	0.1	0.0	187.4	314.9	21.3	0.4	0.0	336.6	524.0
PM _{2.5}	154.9	7.5	0.1	0.0	162.5	275.5	15.6	0.4	0.0	291.4	454.0
CPM	23.4	1.0	0.3	0.0	24.7	30.5	2.0	1.1	0.0	33.6	58.3
SO ₂	34.4	210.9	0.0	0.0	245.4	44.8	438.1	0.1	0.0	483.0	728.4
NO _x	303.1	30.1	17.1	0.0	350.3	394.6	62.4	55.5	0.0	512.5	862.8
CO	768.7	3.2	5.1	0.0	777.1	1,000.8	6.6	16.6	0.0	1,024.1	1,801.2
VOC	17.9	0.5	0.3	0.0	18.7	23.3	1.0	1.1	0.0	25.4	44.1
Pb	0.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.8	3.8	6.8
CO ₂	132,052	7,207	3,243	7,556	150,058	171,920	14,967	10,504	9,397	206,789	356,847
CH ₄	44.1	0.3	0.1	2.8	47.2	57.4	0.6	0.2	3.5	61.7	108.9
N ₂ O	5.8	0.1	0.0	0.4	6.2	7.5	0.1	0.0	0.5	8.1	14.4
CO _{2m}	132,102	7,208	3,243	7,559	150,111	171,985	14,968	10,504	9,401	206,859	356,970
CO _{2e}	134,878	7,232	3,246	7,736	153,092	175,600	15,018	10,515	9,622	210,754	363,846

Table 9
PSD Applicability Summary

Emissions	PM	PM ₁₀	PM _{2.5}	CPM	SO ₂	NO _x	CO	VOC	Pb	CO ₂	CH ₄	N ₂ O	CO _{2m}	CO _{2e}
Baseline	569.8	421.9	368.5	46.5	163.7	627.8	1,616.1	35.5	4.7	276,355	90.3	11.9	276,457	282,144
Projected Actual	662.6	524.0	454.0	58.3	728.4	862.8	1,801.2	44.1	6.8	356,847	108.9	14.4	356,970	363,846
Accommodated	709.1	524.0	454.0	58.3	728.4	862.8	1,934.4	44.1	6.8	356,847	108.9	14.4	356,970	363,846
Net Emission Change	(46.5)	0.0	0.0	0.0	0.0	0.0	(133.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PSD Threshold	25	15	10	*	40	40	100	40	0.6				75,000	75,000
Is PSD Permit Required?	No	No	No	No	No	No	No	No	No				No	No

*CPM is added to PM₁₀ and PM_{2.5} to determine applicability.

SC Reg. 61-62.5, Standard No. 8 – Toxic Air Pollutants

Standard No. 8 does not apply to fuel burning sources or sources subject to a MACT standard. Therefore, Standard No. 8 does not apply to the No. 1 and No. 2 Combination Boilers.

40 CFR 60, Subpart D – Standards of Performance for Fossil-Fuel-Fired Steam Generators and 40 CFR 60, Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

The No. 1 and No. 2 Combination Boilers were constructed in 1959 and 1968 respectively, prior to the applicability date of New Source Performance Standards (NSPS) Subpart D and Subpart Db. The NSPS definition of modification at §60.14(e)(5) includes an exemption for “the addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the

Ms. Katharine Buckner

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Administrator determines to be less environmentally beneficial.” This project is being done solely for Industrial Boiler MACT compliance and therefore is not an NSPS modification because it is environmentally beneficial by its very nature. The emissions of PM, SO₂, and NO_x from the No. 1 and No. 2 Combination Boilers are expected to remain unchanged or decrease as a result of the project. Therefore, NSPS Subpart D and Db are not applicable.

40 CFR 64 – Compliance Assurance Monitoring (CAM)

The No. 1 and No. 2 Combination Boilers are currently subject to CAM for particulate matter. The current CAM plan is based on the ESP performance as indicated by the continuous opacity monitors (COMS) on each boiler. There are no proposed changes to the ESP’s at this time, so there are no proposed changes to the current CAM plan requirements.

If modifications to the ESP’s are eventually required for compliance with the Industrial Boiler MACT requirements, CAM will be re-evaluated at that time. The current CAM requirements will be superseded by the Industrial Boiler MACT monitoring requirements following the January 31, 2016 compliance date.

Summary

As outlined above, Resolute believes this project qualifies for the exemption from the requirement to obtain a construction permit under the Department’s November 2, 2011 guidance document “Like-for-Like replacement of equipment and control device(s) at Prevention of Significant Deterioration (PSD) Major Sources.”

If you have any questions, require further clarification, or need additional information regarding this exemption request, please do not hesitate to contact me.

Sincerely,



Steven R. Moore
URS Corporation

Attachment

cc: Mr. Dale Herendeen – Resolute FP US Inc.

No. 1 Combination Boiler Fuel Usage

No. 1 Combination Boiler					Conversion Factors				
					Bark	No. 6 Oil	Gas	TDF	
					Btu/lb	btu/gal	btu/cf	btu/lb	
					4,500	150,000	1,000	15,500	

	No. 1 Combination Boiler				No. 1 Combination Boiler				
	Bark	No. 6 Oil	Gas	TDF	Bark	No. 6 Oil	Gas	TDF	TOTAL
Month	(tons)	(gallons)	(MMBtu)	(tons)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)
Jan-11	24,411	108,678	5,932	372	295.3	21.9	8.0	15.5	340.7
Feb-11	22,640	80,292	5,385	435	303.2	17.9	8.0	20.1	349.2
Mar-11	24,545	24,851	4,202	388	296.9	5.0	5.6	16.2	323.7
Apr-11	21,708	8,186	2,967	381	271.4	1.7	4.1	16.4	293.6
May-11	20,192	9,341	3,065	304	244.3	1.9	4.1	12.6	262.9
Jun-11	16,589	5,148	5,143	242	207.4	1.1	7.1	10.4	226.0
Jul-11	16,011	1,884	3,050	250	193.7	0.4	4.1	10.4	208.6
Aug-11	16,256	18,293	3,835	389	196.7	3.7	5.2	16.2	221.7
Sep-11	19,123	13,808	3,885	37	239.0	2.9	5.4	1.6	248.9
Oct-11	22,141	55,816	7,340	383	267.8	11.3	9.9	16.0	304.9
Nov-11	19,858	18,738	4,945	380	248.2	3.9	6.9	16.4	275.3
Dec-11	22,000	8,177	4,816	326	266.1	1.6	6.5	13.6	287.8
Jan-12	22,045	8,844	4,037	283	266.7	1.8	5.4	11.8	285.7
Feb-12	22,738	3,573	3,412	274	294.0	0.8	4.9	12.2	311.9
Mar-12	22,350	2,657	4,811	283	270.4	0.5	6.5	11.8	289.2
Apr-12	24,350	6,089	6,936	400	304.4	1.3	9.6	17.2	332.5
May-12	20,780	18,815	10,388	334	251.4	3.8	14.0	13.9	283.0
Jun-12	15,307	0	2,988	135	191.3	0.0	4.1	5.8	201.3
Jul-12	15,230	1,560	9,341	257	184.2	0.3	12.6	10.7	207.8
Aug-12	22,275	682	6,850	311	269.5	0.1	9.2	13.0	291.8
Sep-12	22,788	0	4,138	239	284.9	0.0	5.7	10.3	300.9
Oct-12	21,278	0	7,255	263	257.4	0.0	9.8	10.9	278.1
Nov-12	25,163	6,940	9,153	321	314.5	1.4	12.7	13.8	342.5
Dec-12	23,348	4,555	6,033	402	282.4	0.9	8.1	16.7	308.2
Highest Month (MMBtu/hr)					314.5	21.9	14.0	20.1	349.2
24-month Average (MMBtu/hr)					258.4	3.5	7.4	13.1	282.3
Potential (MMBtu/hr)					392.0	392.0	405.0	46.5	

No. 2 Combination Boiler Fuel Usage

No. 2 Combination Boiler					Conversion Factors				
					Bark	No. 6 Oil	Gas	TDF	
					Btu/lb	btu/gal	btu/cf	btu/lb	
					4,500	150,000	1,000	15,500	

	No. 2 Combination Boiler				No. 2 Combination Boiler				
	Bark	No. 6 Oil	Gas	TDF	Bark	No. 6 Oil	Gas	TDF	TOTAL
Month	(tons)	(gallons)	(MMBtu)	(tons)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)
Jan-11	32,111	225,689	4,634	489	388.4	45.5	6.2	20.4	460.5
Feb-11	28,157	138,437	10,490	541	377.1	30.9	15.6	25.0	448.6
Mar-11	32,476	56,905	5,572	513	392.9	11.5	7.5	21.4	433.2
Apr-11	29,081	5,123	3,019	510	363.5	1.1	4.2	22.0	390.7
May-11	31,047	6,758	3,401	467	375.6	1.4	4.6	19.4	401.0
Jun-11	26,690	713	4,601	390	333.6	0.1	6.4	16.8	357.0
Jul-11	25,497	352	3,096	398	308.4	0.1	4.2	16.6	329.2
Aug-11	24,716	9,399	6,569	591	299.0	1.9	8.8	24.6	334.3
Sep-11	28,411	25,404	3,767	56	355.1	5.3	5.2	2.4	368.1
Oct-11	22,149	43,625	10,587	383	267.9	8.8	14.2	16.0	306.9
Nov-11	29,938	35,051	3,782	573	374.2	7.3	5.3	24.7	411.4
Dec-11	29,983	16,266	3,734	444	362.7	3.3	5.0	18.5	389.5
Jan-12	33,852	23,612	9,482	435	409.5	4.8	12.7	18.1	445.1
Feb-12	31,327	7,372	4,349	377	405.1	1.6	6.2	16.8	429.7
Mar-12	28,436	4,456	8,713	360	344.0	0.9	11.7	15.0	371.6
Apr-12	29,988	8,633	16,269	492	374.9	1.8	22.6	21.2	420.4
May-12	29,433	66,534	19,286	473	356.0	13.4	25.9	19.7	415.1
Jun-12	30,607	266	9,968	269	382.6	0.1	13.8	11.6	408.1
Jul-12	27,342	0	3,440	461	330.8	0.0	4.6	19.2	354.6
Aug-12	23,481	0	9,219	328	284.0	0.0	12.4	13.7	310.1
Sep-12	24,653	0	9,693	259	308.2	0.0	13.5	11.1	332.8
Oct-12	31,955	0	12,519	394	386.6	0.0	16.8	16.4	419.8
Nov-12	26,136	64,710	32,566	333	326.7	13.5	45.2	14.4	399.8
Dec-12	30,605	18,704	24,391	527	370.2	3.8	32.8	22.0	428.7
Highest Month (MMBtu/hr)					409.5	45.5	45.2	25.0	460.5
24-month Average (MMBtu/hr)					353.2	6.5	12.7	17.8	390.3
Potential (MMBtu/hr)					498.0	700.0	720.0	46.5	

No. 1 Combination Boiler Emissions

No. 1 Combination Boiler					Actual Heat Input - Existing (old) OFA System and MDC					Actual Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
					258.4	3.5	7.4	13.1	282.3	258.4	3.5	7.4	13.1	282.3
	Emission Factor				Actual Emissions - Existing (old) OFA System and MDC					Actual Emissions - Upgraded OFA System and MDC				
	Bark	No. 6 Oil	Gas	TDF	Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL
Pollutant	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	1.74E-01	1.51E-01	1.90E-03	2.20E-06	196.3	2.3	0.1	0.0	198.7	182.6	2.3	0.1	0.0	185.0
PM10	1.29E-01	1.07E-01	1.90E-03	2.20E-06	145.4	1.6	0.1	0.0	147.1	145.4	1.6	0.1	0.0	147.1
PM2.5	1.12E-01	7.80E-02	1.90E-03	2.20E-06	127.3	1.2	0.1	0.0	128.5	127.3	1.2	0.1	0.0	128.5
CPM	1.70E-02	1.00E-02	5.70E-03		19.2	0.2	0.2		19.6	19.2	0.2	0.2		19.6
SO2	2.50E-02	2.20E+00	6.00E-04	1.40E-05	28.3	33.8	0.0	0.0	62.1	28.3	33.8	0.0	0.0	62.1
NOx	2.20E-01	3.13E-01	2.80E-01	9.80E-05	249.0	4.8	9.1	0.0	262.9	249.0	4.8	9.1	0.0	262.9
CO	6.00E-01	3.33E-02	8.40E-02	7.20E-05	679.0	0.5	2.7	0.0	682.2	631.5	0.5	2.7	0.0	634.7
VOC	1.30E-02	5.07E-03	5.50E-03		14.7	0.1	0.2		15.0	14.7	0.1	0.2		15.0
Pb	7.40E-06	2.80E-05	5.00E-07	3.44E-02	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	2.0
CO2	9.59E+01	7.51E+01	5.30E+01	8.60E+01	108,474	1,154	1,717	4,919	116,264	108,474	1,154	1,717	4,919	116,264
CH4	3.20E-02	3.00E-03	1.00E-03	3.20E-02	36.2	0.0	0.0	1.8	38.1	36.2	0.0	0.0	1.8	38.1
N2O	4.20E-03	6.00E-04	1.00E-04	4.20E-03	4.8	0.0	0.0	0.2	5.0	4.8	0.0	0.0	0.2	5.0
CO2m					108,515	1,154	1,718	4,921	116,307	108,515	1,154	1,718	4,921	116,307
CO2e					110,795	1,158	1,719	5,036	118,709	110,795	1,158	1,719	5,036	118,709
All emission factors from Title V Inventory except Bark PM average of 2011 and 2013 compliance test values and Bark PM10 and PM2.5 ratioed by AP-42 emission factors.														
No. 1 Combination Boiler					Potential Heat Input - Existing (old) OFA System and MDC					Potential Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
					392.0	392.0	405.0	46.5	405.0	392.0	392.0	405.0	46.5	405.0
	Emission Factor				Potential Emissions - Existing (old) OFA System and MDC					Potential Emissions - Upgraded OFA System and MDC				
	Bark	No. 6 Oil	Gas	TDF	Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM
Pollutant	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(lb/MMBtu)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
PM	1.74E-01	1.51E-01	1.90E-03	2.20E-06	297.9	258.6	3.4	0.0	297.9	277.0	258.6	3.4	0.0	277.0
PM10	1.29E-01	1.07E-01	1.90E-03	2.20E-06	220.7	183.8	3.4	0.0	220.7	220.7	183.8	3.4	0.0	220.7
PM2.5	1.12E-01	7.80E-02	1.90E-03	2.20E-06	193.1	134.0	3.4	0.0	193.1	193.1	134.0	3.4	0.0	193.1
CPM	1.70E-02	1.00E-02	5.70E-03		29.2	17.2	10.1		29.2	29.2	17.2	10.1		29.2
SO2	2.50E-02	2.20E+00	6.00E-04	1.40E-05	42.9	3,773.9	1.1	0.0	3,773.9	42.9	3,773.9	1.1	0.0	3,773

No. 2 Combination Boiler Emissions

No. 2 Combination Boiler					Actual Heat Input - Existing (old) OFA System and MDC					Actual Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)
					353.2	6.5	12.7	17.8	390.3	353.2	6.5	12.7	17.8	390.3

Pollutant	Emission Factor				Actual Emissions - Existing (old) OFA System and MDC					Actual Emissions - Upgraded OFA System and MDC				
	Bark (lb/MMBtu)	No. 6 Oil (lb/MMBtu)	Gas (lb/MMBtu)	TDF (lb/MMBtu)	Bark (tpy)	No. 6 Oil (tpy)	Gas (tpy)	TDF (tpy)	TOTAL (tpy)	Bark (tpy)	No. 6 Oil (tpy)	Gas (tpy)	TDF (tpy)	TOTAL (tpy)
PM	2.37E-01	1.51E-01	1.90E-03	2.20E-06	366.7	4.3	0.1	0.0	371.1	341.0	4.3	0.1	0.0	345.4
PM ₁₀	1.76E-01	1.07E-01	1.90E-03	2.20E-06	271.6	3.1	0.1	0.0	274.8	271.6	3.1	0.1	0.0	274.8
PM _{2.5}	1.54E-01	7.80E-02	1.90E-03	2.20E-06	237.6	2.2	0.1	0.0	240.0	237.6	2.2	0.1	0.0	240.0
CPM	1.70E-02	1.00E-02	5.70E-03		26.3	0.3	0.3		26.9	26.3	0.3	0.3		26.9
SO ₂	2.50E-02	2.20E+00	6.00E-04	1.40E-05	38.7	62.9	0.0	0.0	101.6	38.7	62.9	0.0	0.0	101.6
NO _x	2.20E-01	3.13E-01	2.80E-01	9.80E-05	340.4	9.0	15.6	0.0	364.9	340.4	9.0	15.6	0.0	364.9
CO	6.00E-01	3.33E-02	8.40E-02	7.20E-05	928.2	1.0	4.7	0.0	933.9	863.3	1.0	4.7	0.0	868.9
VOC	1.30E-02	5.07E-03	5.50E-03		20.1	0.1	0.3		20.6	20.1	0.1	0.3		20.6
Pb	7.40E-06	2.80E-05	5.00E-07	3.44E-02	0.0	0.0	0.0	2.7	2.7	0.0	0.0	0.0	2.7	2.7
CO ₂	9.59E+01	7.51E+01	5.30E+01	8.60E+01	148,287	2,150	2,957	6,697	160,090	148,287	2,150	2,957	6,697	160,090
CH ₄	3.20E-02	3.00E-03	1.00E-03	3.20E-02	49.5	0.1	0.1	2.5	52.1	49.5	0.1	0.1	2.5	52.1
N ₂ O	4.20E-03	6.00E-04	1.00E-04	4.20E-03	6.5	0.0	0.0	0.3	6.8	6.5	0.0	0.0	0.3	6.8
CO _{2m}					148,343	2,150	2,957	6,700	160,149	148,343	2,150	2,957	6,700	160,149
CO _{2e}					151,461	2,157	2,960	6,857	163,435	151,461	2,157	2,960	6,857	163,435

All emission factors from Title V Inventory except Bark PM average of 2011 and 2013 compliance test values and Bark PM₁₀ and PM_{2.5} ratioed by AP-42 emission factors.

No. 2 Combination Boiler					Potential Heat Input - Existing (old) OFA System and MDC					Potential Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	MAXIMUM	Bark	No. 6 Oil	Gas	TDF	MAXIMUM
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)
					498.0	700.0	720.0	46.5	720.0	498.0	700.0	720.0	46.5	720.0

Pollutant	Emission Factor				Potential Emissions - Existing (old) OFA System and MDC					Potential Emissions - Upgraded OFA System and MDC				
	Bark (lb/MMBtu)	No. 6 Oil (lb/MMBtu)	Gas (lb/MMBtu)	TDF (lb/MMBtu)	Bark (tpy)	No. 6 Oil (tpy)	Gas (tpy)	TDF (tpy)	MAXIMUM (tpy)	Bark (tpy)	No. 6 Oil (tpy)	Gas (tpy)	TDF (tpy)	MAXIMUM (tpy)
PM	2.37E-01	1.51E-01	1.90E-03	2.20E-06	517.0	461.8	6.0	0.0	517.0	480.8	461.8	6.0	0.0	480.8
PM ₁₀	1.76E-01	1.07E-01	1.90E-03	2.20E-06	382.9	328.3	6.0	0.0	382.9	382.9	328.3	6.0	0.0	382.9
PM _{2.5}	1.54E-01	7.80E-02	1.90E-03	2.20E-06	335.1	239.2	6.0	0.0	335.1	335.1	239.2	6.0	0.0	335.1
CPM	1.70E-02	1.00E-02	5.70E-03		37.1	30.7	18.0		37.1	37.1	30.7	18.0		37.1
SO ₂	2.50E-02	2.20E+00	6.00E-04	1.40E-05	54.5	6,739.1	1.9	0.0	6,739.1	54.5	6,739.1	1.9	0.0	6,739.1
NO _x	2.20E-01	3.13E-01	2.80E-01	9.80E-05	479.9	960.7	883.0	0.0	960.7	479.9	960.7	883.0	0.0	960.7
CO	6.00E-01	3.33E-02	8.40E-02	7.20E-05	1,308.7	102.2	264.9	0.0	1,308.7	1,217.1	102.2	264.9	0.0	1,217.1
VOC	1.30E-02	5.07E-03	5.50E-03		28.4	15.5	17.3		28.4	28.4	15.5	17.3		28.4
Pb	7.40E-06	2.80E-05	5.00E-07	3.44E-02	0.0	0.1	0.0	7.0	7.0	0.0	0.1	0.0	7.0	7.0
CO ₂	9.59E+01	7.51E+01	5.30E+01	8.60E+01	209,075	230,257	167,204	17,510	230,257	209,075	230,257	167,204	17,510	230,257
CH ₄	3.20E-02	3.00E-03	1.00E-03	3.20E-02	69.8	9.2	3.2	6.5	69.8	69.8	9.2	3.2	6.5	69.8
N ₂ O	4.20E-03	6.00E-04	1.00E-04	4.20E-03	9.2	1.8	0.3	0.9	9.2	9.2	1.8	0.3	0.9	9.2
CO _{2m}					209,154	230,268	167,207	17,517	624,146	209,154	230,268	167,207	17,517	624,146
CO _{2e}					213,550	231,035	167,377	17,927	629,889	213,550	231,035	167,377	17,927	629,889

All emission factors from Title V Inventory except Bark PM average of 2011 and 2013 compliance test values and Bark PM₁₀ and PM_{2.5} ratioed by AP-42 emission factors.

No. 2 Combination Boiler					Accommodated Heat Input - Existing (old) OFA System and MDC					Accommodated Heat Input - Upgraded OFA System and MDC				
					Bark	No. 6 Oil	Gas	TDF	TOTAL	Bark	No. 6 Oil	Gas	TDF	TOTAL
					(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)	(MMBtu/hr)
					409.5	45.5	45.2	25.0	525.2	409.5	45.5	45.2	25.0	525.2

Pollutant	Emission Factor				Accommodated Emissions - Existing (old) OFA System and MDC					Accommodated Emissions - Upgraded OFA System and MDC				
	Bark (lb/MMBtu)	No. 6 Oil (lb/MMBtu)	Gas (lb/MMBtu)	TDF (lb/MMBtu)	Bark (tpy)	No. 6 Oil (tpy)	Gas (tpy)	TDF (tpy)	MAXIMUM (tpy)	Bark (tpy)	No. 6 Oil (tpy)	Gas (tpy)	TDF (tpy)	MAXIMUM (tpy)
PM	2.37E-01	1.51E-01	1.90E-03	2.20E-06	425.1	30.0	0.4	0.0	455.5	395.3	30.0	0.4	0.0	425.7
PM ₁₀	1.76E-01	1.07E-01	1.90E-03	2.20E-06	314.9	21.3	0.4	0.0	336.6	314.9	21.3	0.4	0.0	336.6
PM _{2.5}	1.54E-01	7.80E-02	1.90E-03	2.20E-06	275.5	15.6	0.4	0.0	291.4	275.5	15.6	0.4	0.0	291.4
CPM	1.70E-02	1.00E-02	5.70E-03		30.5	2.0	1.1		33.6	30.5	2.0	1.1		33.6
SO ₂	2.50E-02	2.20E+00	6.00E-04	1.40E-05	44.8	438.1	0.1	0.0	483.0	44.8	438.1	0.1	0.0	483.0
NO _x	2.20E-01	3.13E-01	2.80E-01	9.80E-05	394.6	62.4	55.5	0.0	512.5	394.6	62.4	55.5	0.0	512.5
CO	6.00E-01	3.33E-02	8.40E-02	7.20E-05	1,076.2	6.6	16.6	0.0	1,099.5	1,000.8	6.6	16.6	0.0	1,024.1
VOC	1.30E-02	5.07E-03	5.50E-03		23.3	1.0	1.1		25.4	23.3	1.0	1.1		25.4
Pb	7.40E-06	2.80E-05	5.00E-07	3.44E-02	0.0	0.0	0.0	3.8	3.8	0.0	0.0	0.0	3.8	3.8
CO ₂	9.59E+01	7.51E+01	5.30E+01	8.60E+01	171,920	14,967	10,504	9,397	206,789	171,920	14,967	10,504	9,397	206,789
CH ₄	3.20E-02	3.00E-03	1.00E-03	3.20E-02	57.4	0.6	0.2	3.5	61.7	57.4	0.6	0.2	3.5	61.7
N ₂ O	4.20E-03	6.00E-04	1.00E-04	4.20E-03	7.5	0.1	0.0	0.5	8.1	7.5	0.1	0.0	0.5	8.1
CO _{2m}					171,985	14,968	10,504	9,401	206,859	171,985	14,968	10,504	9,401	206,859
CO _{2e}					175,600	15,018	10,515	9,622	210,754	175,600	15,018	10,515	9,622	210,754

All emission factors from Title V Inventory except Bark PM average of 2011 and 2013 compliance test values and Bark PM₁₀ and PM_{2.5} ratioed by AP-42 emission factors.

Summary of Engineering Data

Engineering data collected for filterable particulate matter (PM) indicates the combination boilers may exceed the applicable Boiler MACT emission limit approximately 7% of the operating time.

Engineering Data Points	Heat Input MMBtu/hr	Filterable Particulate	
		lb/hr	lb/MMBtu
1	376.5	40	0.11
2	338.4	35	0.10
3	326.7	15	0.05
4	337.5	11	0.03
5	519.5	149	0.29
6	503.6	186	0.37
7	329.5	292	0.89
8	326.7	101	0.31
9	447.3	125	0.28
10	423.9	45	0.11
11	657.9	115	0.17
12	448.2	116	0.26
13	652.5	136	0.21
14	647.1	244	0.38
Boiler MACT Limit			0.44
Number of Data Points Exceeding Limit			1
Percent exceeding MACT Limit			7%

Engineering data for carbon monoxide presented below (purple line) suggests the combination boilers may exceed the applicable Boiler MACT emission limit approximately 7% of the operating time.

